APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
WANG, TED M

ART UNIT	PAPER NUMBER
2611	

DATE MAILED: 11/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	10/633,135	MITCHELL ET AL.
	Examiner	Art Unit
	Ted M. Wang	2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>31 July 2003</u>.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-25</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-25</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>31 July 2003</u> is/are: a)☐ accepted or b)☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Drawings

1.   The drawing, Fig.4, is objected to because there are no labels for blocks

470. These blocks need to have descriptive labels under 37 CFR 1.84(n) and

1.84(o). For example, in Fig.4, "storage device" may be used for the label of blocks

470.

A proposed drawing correction or corrected drawings are required in reply to the

Office action to avoid abandonment of the application. The objection to the

drawings will not be held in abeyance.

Claim Objections

2.   Claim 19 is objected to because of the following informalities:

- ❑   Claim 19, line 1, change "machine-readable" to --- computer-readable ---,

    and line 2, change "if" to --- is ---, and after "executed" insert --- by a

    computer to ---.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102

that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the

treaty defined in section 351(a) shall have the effects for purposes of this subsection of an
application filed in the United States only if the international application designated the United
States and was published under Article 21(2) of such treaty in the English language.

4.   Claims 1-4, 6-16 and 18 are rejected under 35 U.S.C. 102(e) as being

anticipated by Vila et al. (US 6,654,824).

❑   With regard claim 1, Vila et al. discloses a method comprising:

receiving a data sequence in a receiver having a plurality of lanes

(column 2 lines 25-34 and column 4 lines 11-19);

detecting a predetermined character (Fig.8, T0-T3, and column 7

lines 1-2) in the data sequence (Fig.8 and column 7 lines 1-9) in a first lane

(column 2 lines 34-35 and column 4 lines 19-21 and column 7 lines 39-44);

and

tracking a time period (column 2 lines 36-41 and column 4 lines 21-

29) until the predetermined character is detected in the plurality of lanes

(column 2 lines 36-44 and column 4 lines 24-28, where the time period is

from the beginning of the examining of the test sequence at each lane to

the test sequence symbol received via each of the transmission lanes).

❑   With regard claim 2, Vila et al. further discloses resetting the receiver if a

predetermined number of cycles is exceeded before the predetermined

character is detected in the plurality of lanes (column 2 lines 36-44 and

column 4 lines 21-29).

o   With regard claim 3, Vila et al. further discloses realigning the data

sequence based on when the predetermined character is detected in each

of the plurality of lanes (column 2 lines 52-65 and column 8 lines 34-55).

o   With regard claim 4, Vila et al. further discloses transmitting the realigned

data sequence from the receiver after the predetermined character is

detected in the plurality of lanes (column 8 lines 56-58).

o   With regard claim 6, Vila et al. further discloses wherein the data sequence

comprising a training sequence (Fig.8 element T0-T3 and column 7 lines 1-

4, where the test sequence, T1-T3, is considered as a training sequence

that been transmitted via each of the transmission lane, respectively).

o   With regard claim 7, Vila et al. further discloses wherein the data sequence

is byte striped (column 4 lines 53-56 and column 7 lines 12-14).

o   With regard claim 8, Vila et al. discloses a method comprising:

receiving data packets (streams) (Fig.3 and 4 elements 34a-34d, and

column 4 line 61 –column 5 line 11) on a plurality of channels of a receiver

(Fig.2 elements 24, 22, 23a-23d, column 4 lines 30-44);

detecting whether the data packets (streams) are misaligned while

the data packets (streams) are maintained in buffer corresponding to the

plurality of channels (column 2 lines 34-38 and 45-58 and column 8 lines

34-55); and

aligning the data packets (streams) if the data packets (streams) are

misaligned (column 2 lines 58-65 and column 8 lines 56-67).

Where the "<u>packet</u>" is defined as "<u>a short fixed length section of data</u>

<u>that is transmitted as a unit in an electronic communications network</u>" by

Merriam – Webster's collegiate Dictionary, 10th edition, 2000. Vila et al.

teaches the data streams could be bytes, words or frames (column 4 lines

53-56). It is inherent that the data symbols "0" – '7" (Fig.3) and data

symbols "0" – "15", individually, can be considered as a packet since each

of data symbol ("0"m-"15") has fixed-length section (byte or word or frame)

as addressed in the above paragraph.

- With regard claim 9, Vila et al. further discloses wherein determining

   whether the data packets are misaligned comprises analyzing whether a

   predetermined value is received on each of the plurality of channels (Fig.8,

   T0-T3, and column 7 lines 1-2) within a first time period (column 2 lines 34-

   35 and column 4 lines 19-21 and column 7 lines 39-44, where examiner

   considers the first time period as the time period from a particular buffer

   being reset to the test sequence received in the particular buffer).

- With regard claim 10, Vila et al. further discloses the data packets in an

   aligned manner (column 8 lines 34-55).

- With regard claim 11, Vila et al. further discloses holding the data packets

   until each of the buffers has a predefined depth (column 7 line 50 – column

   8 line 4).

- With regard claim 12, Vila et al. further discloses realigning the data

   packets if the data packets become misaligned (column 8 lines 56-67).

❑ With regard claim 13, Vila et al. further discloses wherein the data packets are byte striped (column 4 lines 53-56 and column 7 lines 12-14).

❑ With regard claim 14, Vila et al. discloses

buffers to store data packets from a plurality of channels (column 2 lines 45-55, Fig.2 and Fig.4 and column 7 lines 50-59); and

a state machine (Fig.10) coupled to the buffers to deskew the data packets while the data packets are stored in the buffers (column 7 line 60 – column 8 line 19).

Where the "packet" is defined as "a short fixed length section of data that is transmitted as a unit in an electronic communications network" by Merriam – Webster's collegiate Dictionary, 10th edition, 2000. Vila et al. teaches the data streams could be bytes, words or frames (column 4 lines 53-56). It is inherent that the data symbols "0" – '7" (Fig.3) and data symbols "0" – "15", individually, can be considered as a packet since each of data symbol ("0"m-"15") has fixed-length section (byte or word or frame) as addressed in the above paragraph.

❑ With regard claim 15, Vila et al. further discloses wherein the state machine is adapted to hold the data packets in the buffers until a predetermined character is present in each of the buffers (Fig.10 and column 7 line 50 – column 8 line 1).

❑ With regard claim 16, Vila et al. further discloses a counter to count cycles occurring after receipt of a first data packet having the predetermined

character (column 2 lines 36-44 and column 4 lines 21-29 and column 7 line

65 – column 8 line 9, where it is inherent to have a counter to count the

predetermined maximum number as indicated in the cited paragraphs).

❑ With regard claim 18, Vila et al. further discloses wherein the data packets

comprise InfiniBand data packets (column 4 lines 30-36).

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for

all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically
> disclosed or described as set forth in section 102 of this title, if the
> differences between the subject matter sought to be patented and the prior
> art are such that the subject matter as a whole would have been obvious at
> the time the invention was made to a person having ordinary skill in the art
> to which said subject matter pertains. Patentability shall not be negatived
> by the manner in which the invention was made.

6.   Claims 5 and 19-21 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Vila et al. (US 6,654,824) in view of Kim et al. (US

2003/0219040).

❑ With regard claim 5, Vila et al. discloses all of the subject matter as

described in the above paragraph except for specifically teaching

determining whether the predetermined character is received

simultaneously on the plurality of lanes.

However, Kim et al. teaches determining whether the predetermined

character is received simultaneously on the plurality of lanes (Fig.2 element

402 and paragraph 53 lines 17-22) in order to perform the deskew operation (paragraph 32) so that the data transferring quality can be improved for the multiple lanes.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to include the method as taught by Kim et al. in which determining whether the predetermined character is received simultaneously on the plurality of lanes, into Vilas' high-speed dynamic multi-lane deskewer circuitry so as to improve the data transferring quality for the multiple lanes.

❑ With regard claim 19, Vila et al. discloses all of the subject matter as described above except for the method written by a software program embodied in a computer-readable medium.

However, Kim et al. teaches that the method for a high-speed dynamic multi-lane de-skewer can be implemented in software stored in a computer-readable medium (paragraph 41 and page 7 claim 10). The computer-readable medium is an electronic, magnetic, optical, or other physical device or means that can be contain or store a computer program for use by or in connection with a computer-related system or method. One skilled in the art would have clearly recognized that the method of "Vila's reference" would have been implemented in a software. The implemented software would perform same function of the hardware for less expense, adaptability, and flexibility. Therefore, it would have been obvious to have

used the software in "Vila's reference" as taught by Kim et al. in order to

reduce cost and improve the adaptability and flexibility of the .

communication system.

- With regard claim 20, which is an article claim related to claim 2, all

  limitation is contained in claim 2. The explanation of all the limitation is

  already addressed in the above paragraph.

- With regard claim 21, which is an article claim related to claim 3, all

  limitation is contained in claim 3. The explanation of all the limitation is

  already addressed in the above paragraph

7.   Claims 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Vila et al. (US 6,654,824) in view of Deng (US 6,871,301).

- With regard claim 17, Vila et al. discloses all of the subject matter as

  described in the above paragraph except for specifically teaching a plurality

  of state machines, each corresponding to one of the plurality of channels.

  However, Deng teaches a plurality of state machines, each

  corresponding to one of the plurality of channels (Fig.3 element 60, column

  3 lines 31-32 and column 4 lines 57-65, where the deskew state machine is

  included in each of the switch fabric chips 12a-12d of Fig.2.) in order to

  align the data streams on all chips four chips 12a-d (column 5 lines 1-2) so

  that the skew introduced between lanes can be eliminated.

  Therefore, It would have been obvious to one of ordinary skill in the

  art at the time of the invention was made to include the plurality of state

machines as taught by Deng, into Vila's individual receiver (Fig.5 elements

56a-56d) so as to eliminate the skew introduced between lanes.

8.   Claims 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Mann (US 6,625,675) in view of Vila et al. (US 6,654,824).

   □ With regard claim 22, Mann discloses

         a switch fabric (Fig.1A and 1B element 30 and column 1 lines 12-18

and 38-40);

         a plurality of buffers (Fig.2 element 250 and column 3 lines 18-21)

coupled to the switch fabric to receive data packets (column 2 lines 52-53)

from a plurality of channels.

         Mann discloses all of the subject matter as described in the above

paragraph except for specifically teaching a state machine coupled to the

plurality of buffers to deskew the data packets while the data packets are

received in the plurality of buffers.

         However, Vila et al. teaches a state machine (Fig.10) coupled to the

plurality of buffers to deskew the data packets while the data packets are

received in the plurality of buffers (column 7 line 50 – column 8 line 16) in

order to align the data streams between lanes so that the skew introduced

between lanes can be eliminated.

         Therefore, It would have been obvious to one of ordinary skill in the

art at the time of the invention was made to include the system with a state

machine to deskew the data packet as taught by Vila et al. into Mann's core

logic circuitry so as to eliminate the skew introduced between lanes.

☐ With regard claim 23, Mann further discloses a host channel adapter

including the plurality of buffers (Fig.1A element 35 and column 3 lines 45-

50).

☐ With regard claim 24, Mann further discloses wherein the host channel

adapter further includes a counter to count cycles occurring after receipt of

a first data packet having a predetermined character (Fig.3A and 3B

element 275 and column 4 lines 10-29 and column 5 line 45 – column 6 line

38, where the predetermined character is the 'comma" symbol (column 5

lines 63-64)).

☐ With regard claim 25, Mann further discloses wherein the switch fabric

comprises an InfiniBand switch fabric (Fig.1A and 1B element 30 and

column 1 lines 12-18 and 38-40).

Conclusion

9.   Any inquiry concerning this communication or earlier communications from

the examiner should be directed to Ted M. Wang whose telephone number is 571-

272-3053. The examiner can normally be reached on M-F, 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the

examiner's supervisor, Chieh Fan can be reached on 571-272-3042. The fax

phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ted M Wang
Examiner
Art Unit 2611

Ted M. Wang/